

CLAIMS

We Claim:

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1. A single-piece manifold for a fire sprinkler system comprising:

10 a body defining a conduit therethrough, an inlet to said conduit for connecting said manifold to a supply of water, an outlet to said conduit for connecting said manifold to the fire sprinkler system, a main valve in said conduit movable between an open position in which water may enter said body and a closed position in which water is prevented from passing through said body, a check valve arrangement within said conduit for preventing reflux of water back into said water supply, and a
15 vent passageway in communication with said conduit for preventing water from flowing through said conduit when there is a pressure surge in said water supply.

20 2. The single-piece manifold of claim 1 wherein said check valve arrangement comprises a first check valve and a second check valve, said first and second check valves being spaced apart; said first and second check valves being slidable between a closed position wherein said first and second check valves engage a respective valve seat to prevent fluid from passing

through said conduit and an open position wherein fluid can pass through said conduit.

3. The single-piece manifold of claim 2 wherein said first and
5 second check valves are biased closed by a spring means.

4. The single-piece manifold of claim 3 wherein the pressure
generated by said water supply must be at least 175 psi to
overcome said spring means to open said first and second check
10 valves.

5. The single-piece manifold of claim 2 wherein each of said
first and second check valves includes a valve body, a tubular
member, a hollow nose, a guide tube provided in said body,
15 wherein said second check valve's shaft is slidably received in
said guide tube supported by said body, and the shaft of said
first check valve being slidably received in said hollow nose of
said second check valve.

20 6. The single-piece manifold of claim 5 wherein said first and
second check valves include guide arms extending from said valve
plug to support said first and second check valves in said
conduit.

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8. The single-piece manifold of claim 2 further including fire alarm means responsive to movement of said second check valve, and means for preventing the sounding of a false alarm.

10 9. The single-piece manifold of claim 8 wherein said fire alarm means includes a flow switch arrangement which sounds a fire alarm when activated, a plunger which is slidably received in a sleeve to be moved into and out of close proximity with said flow switch arrangement to activate said flow switch arrangement by a cam surface of said second check valve, wherein when said second check valve is moved to an open position, cam surface forces said plunger into contact with said flow switch arrangement to sound said fire alarm.

20 10. The single-piece manifold of claim 9 wherein said plunger includes a first magnet and said flow switch arrangement includes a second magnet, wherein the close proximity of said first and second magnets cause said fire alarm to sound when said second check valve is placed in the second position.

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11. The single-piece manifold of claim 1 wherein said main valve is operatively connected to a tamper switch so that when said main valve is placed in the open position, said tamper switch is de-energized, and when said main valve is placed in the closed position, said tamper switch is energized and sounds an alarm.

12. The single-piece manifold of claim 8 wherein said false alarm prevention means comprises a space bounded by said first and second check valves, said space being in communication with said vent passageway and being of sufficient length to smooth out any random pressure surges in said water supply which would otherwise open said second check valve.

13. The single-piece manifold of claim 1 wherein said vent passageway communicates with atmosphere for venting excess pressure from said space.

14. The single-piece manifold of claim 1 further including a test valve comprising a test valve body having a piston forming a tip thereon, said piston being movable between a closed position in which said tip engages a valve seat and an open position in which water may flow through said test valve.

15. The single-piece manifold of claim 14 wherein said piston is operatively associated with a cam, said piston operating as a cam

follower, said cam being rotated by a cam lever, which when turned will move said piston between its open and closed positions.

5 16. The single-piece manifold of claim 1 wherein said body includes a main housing and a rear housing, said main housing including a rearward flange; said rear housing including resilient fingers which engage said flange to hold said main housing and rear housing together.

10 17. The single-piece manifold of claim 1, wherein said check valve arrangement comprises a first check valve and a second check valve, said first and second check valves being pivotable between a closed position wherein said first and second check
15 valves engage a respective valve seat to prevent fluid from passing through said conduit and an open position wherein fluid can pass through said conduit.

20 18. The single-piece manifold of claim 17, wherein said first and second check valves are biased closed by a spring means.

25 19. The single-piece manifold of claim 18, wherein the pressure generated by said water supply must be at least 175 psi to overcome said spring means to place said first and second check valves in the open position.

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20. The single-piece manifold of claim 17, wherein each of said first and second check valves includes a valve body having an axial extension extending from said valve body.

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21. The single-piece manifold of claim 20, wherein said valve body is pivotally mounted to said body of said manifold at a pivot point by a rod inserted therethrough, such that said valve body pivots about said pivot point.

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22. The single-piece manifold of claim 20, wherein said valve body defines a pair of grooves adapted to receive a sealing means for providing a fluid tight seal between respective valve seat and said valve body.

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23. The single-piece manifold of claim 20, further including a flow switch arrangement operatively associated with said second check valve, said flow switch arrangement causing the sounding of an alarm when said second check valve is placed in the open
20 position by the flow of fluid through said conduit.

24. The single-piece manifold of claim 23, wherein said second check valve includes a magnet and said flow switch arrangement includes a magnet such that said flow switch arrangement is

actuated and signals an alarm whenever said magnets come into close proximity.

25. A check valve assembly carried by a body of a single-piece fire-sprinkler manifold, said assembly comprising:

a first check valve and a second check valve, said first and second check valves each having a valve body, hollow nose, and guide arms extending from said valve body, said tubular member of said first check valve being slidably received in said hollow nose of said second check valve to be slidably positioned between a closed position wherein said first check valve engages a first valve seat and an open position.

26. The check valve assembly of claim 25 wherein said manifold body includes a guide tube, said tubular member of said second check valve being slidably received in said guide tube to slide between a closed position in which said second check valve engages a second valve seat and an open position.

27. The check valve assembly of claim 26 wherein said first and second check valves are spaced apart to define a space, said space being of sufficient length to dampen momentary pressure surges which can open said first check valve, to prevent said momentary surges from opening said second check valve.

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28. The check valve assembly of claim 27, wherein said space is in communication with said space for venting momentary pressure surges inside said conduit to atmosphere.

5 29. A single-piece manifold for a fire sprinkler system comprising a body having a flowpath therethrough, an inlet to said flowpath for connecting said body to a supply of water, an outlet to said flowpath for connecting said body to said sprinkler system, and a means for preventing the sounding of
10 false alarms.

30. The single-piece manifold of claim 29 further including a first valve, a second valve, a first seat associated with said first valve, a second seat associated with said second valve, and
15 an area formed between said first and second valves, each of said valves comprising a valve body which engages its associated seat, said valves being moveable between an open position and a closed position.

20 31. The single-piece manifold of claim 29 wherein said means for preventing the sounding of false alarms comprises a flow switch arrangement electrically connected to a fire alarm for sounding the fire alarm when activated, and a plunger means for activating said flow switch arrangement when fluid flows through said
25 conduit.

sub a 32. The single-piece manifold of claim 29 further including an opening which allows for communication between said flow switch arrangement and said conduit, said opening being positioned above
5 said valve body of said second valve when said second valve is placed in an open position, said plunger means comprising a plunger slidably received in said opening so that when said second valve moves to its open position, said second valve engages said plunger to urge it upwards to activate said flow
10 switch arrangement.

33. The single-piece manifold of claim 31 wherein said means for preventing false alarm comprises a space defined between said first and second valves, said space being in communication with a
15 vent passageway, said vent passageway has one end open to atmosphere which allows a pressure surge to dampen so that it will not open said second valve, thereby preventing activation of said flow switch arrangement and sounding of said fire alarm.